

REMARKS

In the present Amendment, claims 1-31 are cancelled, and Applicants present new claims 32-53 for examination.

In the formula (1), X^1 is CH^3 or F, Rf^1 and Rf^2 are both CF^3 , and R^1 is CH^3 . Thus, the structural unit (a) represented by formula (1) is 6FNPM and 6FNPF, which are disclosed at page 6 of the present specification, lines 1-3, and employed in the Examples.

In the formula (2) and (2a), R^2 is a fluoroalkyl group having 4 to 6 carbon atoms. Further, the structural unit (c) is the structural unit (c1), which is represented by the amended formula (2) (or (2a)).

No new matter is added, and entry of the amendments is respectfully requested. After entry of the Amendment, claims 32-53 will be pending.

As an initial matter, Applicants note that the Examiner inadvertently indicated on the Office Action Summary page that claims 1-11 and 16-26 are pending. The summary page should have indicated that claims 1-31 are pending. However, this point is moot, since claims 1-31 are canceled.

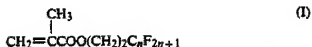
Further, Applicants respectfully request the Examiner to forward initialed Form PTO/SB/08 A & B (modified) for the Information Disclosure Statement filed January 5, 2007.

Applicants submit that the rejections set forth in the Office Action dated January 10, 2007, based on U.S. Patent No. 5,149,753 ("Inukai"), are moot and should be withdrawn, since all of the previously pending claims are cancelled.

Furthermore, new independent claims 32, 38, 48 and 49 are patentable over Inukai for the following reasons.

Independent claims 32 and 48 are directed to a fluorine-containing copolymer comprising a structural unit (a) of the formula (I) in an amount of 32 to 36% by mole and a methyl methacrylate unit (b) in an amount of 64 to 68 % by mole. This formulation allows a third structural unit to be present in an amount of up to 4% by mole (i.e., 100-32-64 = 4).

Inukai discloses a copolymer comprising (a) about 50 to 95% by weight of fluoroalkyl methacrylate of the formula (I):

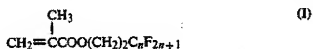


wherein n is an integer of 6 to 10, and (b) about 5 to 50% by weight of methyl methacrylate.

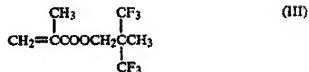
Inukai's fluoroalkyl methacrylate (I) corresponds to the third structural unit of Applicants' copolymer recited in claims 32 and 48. The amount of the fluoroalkyl methacrylate (I) in Inukai's copolymer is from 50 to 90% by weight, which corresponds to an amount of from 13.64 to 81.48% by mole. Accordingly, because the amount of fluoroalkyl methacrylate (I) in Inukai's copolymer exceeds the allowed amount of the third structural unit of Applicants' copolymer (i.e., an amount of up to 4% by mole), Inukai's copolymer is outside the scope of claims 32 and 48. Furthermore, there is nothing in Inukai which would lead one skilled in the art to *reduce* the content of the fluoroalkyl methacrylate of formula (I) to an amount of up to 4% by mole. The conversion from weight % to mole % is provided below under the heading "Calculations."

Therefore, Inukai does not disclose or render obvious the fluorine-containing optical material of present claims 32 and 48.

With respect to independent claims 38 and 49, Inukai discloses a terpolymer comprising (a) about 50 to 95% by weight of fluoroalkyl methacrylate of the formula (I):



wherein n is an integer of 6 to 10, (b) about 5 to 50% by weight of methyl methacrylate, and (c) 0 to about 40% by weight of fluoroalkyl methacrylate of the formula (III):



Although the fluoroalkyl methacrylate (III) corresponds to the structural unit (a) according to present claim 38, Inukai's fluoroalkyl methacrylate (I), wherein the ester moiety is a fluoroalkyl group having 8 to 12 carbon atoms (i.e., $-(\text{CH}_2)_2\text{C}_n\text{F}_{2n+1}$, wherein $n = 6$ to 10), is outside the scope of Applicants' structural unit (c1) of formula (2). This is since the ester moiety R^2 in Applicants' formula (2) is a fluoroalkyl group having 4 to 6 carbon atoms.

Further, Applicants' structural unit (a) corresponds to 6FNPM and 6FNPF. In this regard, when the specific structural units recited in the present claims are contained in a fluorine-containing copolymer, heat resistance (T_g and T_d) are improved together with optical performance. See, e.g., Applicants' Examples, and specifically Table 1 at page 26 and Table 2 at page 29 of the specification. These effects cannot be expected from the disclosure of Inukai.

Therefore, Applicants respectfully submit that Inukai does not disclose or render obvious the fluorine-containing optical material according to present claims 38 and 49.

Calculations

The fluoroalkyl methacrylate of Inukai's formula (I) (shown above) is present in an amount of from 50 to 95% by weight, which corresponds to the following % by mole, assuming a copolymer of 100 g.

Moles of Methyl Methacrylate

5 to 50% by weight of methyl methacrylate in 100 g of the copolymer is 5 to 50 g, which corresponds to 0.05 to 0.5 moles, since the molecular weight of methyl methacrylate is 100.

Moles of Fluoroalkyl Methacrylate

When $n=6$, the molecular weight of fluoroalkyl methacrylate is 432.

50 to 95 g = 0.116 to 0.22 mole.

When $n=7$, the molecular weight of fluoroalkyl methacrylate is 482.

50 to 95 g = 0.104 to 0.197 mole.

When $n=8$, the molecular weight of fluoroalkyl methacrylate is 532.

50 to 95 g = 0.094 to 0.179 mole.

When $n=9$, the molecular weight of fluoroalkyl methacrylate is 582.

50 to 95 g = 0.086 to 0.163 mole.

When $n=10$, the molecular weight of fluoroalkyl methacrylate is 632.

50 to 95 g = 0.079 to 0.150 mole.

Mole % of Fluoroalkyl Methacrylate

Thus, the minimum mole % of Inukai's fluoroalkyl methacrylate (I) corresponds to 13.64% by mole $(0.079 / (0.5+0.079) * 100)$, and the maximum mole % of Inukai's fluoroalkyl methacrylate (I) corresponds to 81.48% by mole $(0.22 / (0.5+0.22) * 100)$. Thus, the fluoroalkyl methacrylate (I) contained in the copolymer of Inukai is at least 13.64% by mole, well outside the scope of the present claims (i.e., an amount of up to 4% by mole of Applicants third structural unit).

Accordingly, allowance of claims 32-53 is respectfully requested. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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Date: May 10, 2007